

Claims

1. A magnetic field adjusting device for mounting on a pole plate (31) mounted on a magnetic field generating source (51), the magnetic field adjusting device comprising
5 a plurality of moveable shimming plugs (42), characterized in that each of the shimming plugs (42) is mounted in a retaining groove (45), whereby each shimming plug can only move in the direction of the retaining groove.
2. The magnetic field adjusting device according to claim 1, wherein said retaining
10 grooves (45) are swallow-tailed grooves, and said shimming plugs (42) have a trapezoidal section, for engaging with and sliding in the swallow-tailed retaining grooves.
3. The magnetic field adjusting device according to claim 1, wherein said retaining
15 grooves (45) are T-shaped grooves, and said shimming plugs (42) have a T-shaped section, for engaging with and sliding in the T-shaped retaining grooves.
4. The magnetic field adjusting device according to any preceding claim, wherein said shimming plug (42) is driven by means of a drive screw (43).
- 20 5. The magnetic field adjusting device according to any of claims 1-4, wherein said shimming plugs (42) are dismountable for replacement with shimming plugs of different size or different magnetic properties.
- 25 6. The magnetic field adjusting device according to any preceding claim, wherein, in use, the shimming plugs are mounted at the periphery of a pole plate (31) and each retaining groove (45) is oriented in a substantially radial direction of said pole plate.
7. An assembly comprising a pole plate (31) and a magnetic field adjusting device
30 according to any preceding claim, wherein the periphery of the pole plate (31) is mounted with a ring-shaped part (40), and said retaining grooves (45) are formed in the ring-shaped part.

8. The assembly according to claim 7, wherein there are twelve retaining grooves (45) evenly distributed around the ring-shaped part (40).

5 9. A magnetic field generating source (51) provided with a magnetic field adjusting device, characterized in that the magnetic field adjusting device comprises adjusting bars (71, 81) mounted at the periphery of the magnetic field generating source (5, 51), the adjusting bars being moveable in a direction substantially parallel to a magnetic field produced by the magnetic field generating source.

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10. A magnetic field generating source according to claim 9, further provided with a pole plate (31) mounted on the magnetic field generating source (51), wherein the adjusting bars (71, 81) are moveable in a direction perpendicular to the pole plate.

15 11. A magnetic field generating source according to claim 9 or claim 10, wherein said adjusting bars (71, 81) are mounted movably in retaining means (72, 73; 82, 83).

12. A magnetic field generating source according to claim 11, wherein said retaining means (72, 73; 82, 83) are arranged at the periphery of the magnetic field generating
20 source.

13. A magnetic field generating source according to claim 11 when dependent on claim 10, wherein said retaining means (72, 73; 82, 83) are arranged at the periphery of the pole plate.

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14. A magnetic field generating source according to any one of claims 9 to 13, wherein said adjusting bars (71, 81) have a rack structure, and are arranged to be driven by means of mating pinion gears (72, 82).

30 15. A magnetic field generating source according to any one of claims 9 to 13, wherein said adjusting bars (71, 81) are in the form of screws, which can be driven through an internal thread formed in the retaining means.

16. The magnetic field adjusting device according to any of claims 9-15, wherein said adjusting bars (71, 81) are dismountable for replacement with adjusting bars of different size or different magnetic properties.

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17. The magnetic field adjusting device or magnetic field generating source of any preceding claim wherein the shimming plugs or adjusting bars are arranged for adjustment in a synchronized manner.

10 18. The magnetic field adjusting device or magnetic field generating source of any preceding claim wherein the shimming plugs or adjusting bars are arranged for remote adjustment by one or more electric motor.

15 19. The magnetic field adjusting device or magnetic field generating source of claim 18 further comprising a computer programmed with magnetic field measurement and/or modeling software, the computer being arranged to control the electric motors to adjust the shimming plugs or adjusting bars in accordance with instructions provided in response to magnetic field measurement or modeling.

20 20. The magnetic field adjusting device or magnetic field generating source according to claim 19, wherein the computer is arranged to control the electric motors to automatically adjust the shimming plugs or adjusting bars to achieve a desired level of field homogeneity.

25 21. A magnetic field generation device comprising a pair of opposing magnetic field generating sources (5, 51) according to any of claim 9-20 arranged to provide a magnetic field generated between them.

30 22. A magnetic field generation device comprising a pair of opposing magnetic field generating sources (5, 51) arranged to provide a magnetic field between them; a pair of pole plates (3, 31), respectively mounted on the opposing faces of the magnetic field generating sources (5, 51), and at least one magnetic field adjusting device

according to any of claims 1-6 or claims 17-20 when dependent on any of claims 1-6.

23. A magnetic field generation device comprising a yoke (1), connected with an upper press plate (2) and a lower press plate (21), the lower press plate and the upper
5 press plate oppositely arranged; and a magnetic field generating device according to claim 21 or 22, with respective magnetic field generating sources (5, 51) and pole plates (3, 31) oppositely mounted on respective said press plates (2, 21).

24. MRI apparatus comprising a magnetic field generation device according to claim
10 22 or claim 23.